CLAIMS

What we claim is:

1. A system, comprising:

detection circuitry;

energy delivery circuitry capable of delivering a plurality of cardiac therapies comprising at least a tachycardia therapy, a bradycardia therapy, and an asystole prevention therapy;

one or more electrodes configured for subcutaneous, non-intrathoracic placement and for coupling to the detection circuitry and energy delivery circuitry; and

a controller coupled to the detection circuitry and energy delivery circuitry, the controller, in response to a cardiac condition requiring treatment, coordinating delivery of a selected one of the tachycardia, bradycardia, and asystole prevention therapies.

2. The system of claim 1, wherein the plurality of cardiac therapies comprises a bradycardia pacing therapy.

3. The system of claim 1, wherein the plurality of cardiac therapies comprises a cardiac resynchronization therapy.

4. The system of claim 1, wherein the plurality of cardiac therapies comprises an antitachycardia pacing therapy.

5. The system of claim 1, wherein the plurality of cardiac therapies comprises a defibrillation therapy.

6. The system of claim 1, wherein the plurality of cardiac therapies comprises a rate smoothing pacing therapy.

7. The system of claim 1, wherein the plurality of cardiac therapies comprises a sub-threshold stimulation therapy.

8. The system of claim 1, wherein the one or more electrodes are configured for cardiac pacing and sensing.

9. The system of claim 1, further comprising a housing within which the detection circuitry, energy delivery circuitry, and controller are situated, wherein the housing is configured for patient-external placement.

10. The system of claim 9, wherein the housing comprises one or more electrodes coupled to the detection circuitry and energy delivery circuitry.

11. The system of claim 9, further comprising one or more surface electrodes configured for coupling to the detection circuitry and energy delivery circuitry.

12. The system of claim 9, further comprising a coupling arrangement configured to couple and de-couple the one or more electrodes to and from the detection circuitry and energy delivery circuitry.

13. The system of claim 1, further comprising a housing within which at least one of the detection circuitry, energy delivery circuitry, and controller is situated, wherein the housing is configured for implantation in a patient.

14. The system of claim 13, wherein the one or more electrodes comprises at least one electrode disposed in or on the housing.

15. The system of claim 1, wherein the asystole prevention therapy delivered by the energy delivery circuitry comprises delivery of pacing pulses at a rate varying between about 2 and about 40 pulses per minute.

16. The system of claim 1, wherein the asystole prevention therapy delivered by the energy delivery circuitry comprises delivery of pacing pulses at a rate insufficient to restore full patient consciousness.

17. The system of claim 1, wherein the asystole prevention therapy delivered by the energy delivery circuitry comprises delivery of pacing pulses at a rate lower than a pacing rate associated with the bradycardia therapy.

18. The system of claim 17, wherein the rate lower than the pacing rate is a fixed rate or a variable rate.

19. The system of claim 1, further comprising a housing within which the detection circuitry, energy delivery circuitry, and controller are situated, wherein the housing is configured for implantation in a patient and the one or more electrodes are disposed in or on the housing to define a unitary structure.

20. The system of claim 19, wherein the housing is configured to have an arcuate shape.

21. A system, comprising:

a housing configured for subcutaneous, non-intrathoracic placement;

detection circuitry provided in the housing;

energy delivery circuitry provided in the housing and capable of delivering each of a tachycardia therapy, a bradycardia therapy, and an asystole prevention therapy;

one or more electrodes configured for subcutaneous, non-intrathoracic placement and coupled to the detection circuitry and energy delivery circuitry; and

a controller provided in the housing and coupled to the detection circuitry and energy delivery circuitry, the controller, in response to a cardiac condition requiring treatment, delivering a selected one of the tachycardia, bradycardia, and asystole prevention therapies.

22. The system of claim 21, wherein the plurality of cardiac therapies comprises a bradycardia pacing therapy.

23. The system of claim 21, wherein the plurality of cardiac therapies comprises a cardiac resynchronization therapy.

24. The system of claim 21, wherein the plurality of cardiac therapies comprises an antitachycardia pacing therapy.

25. The system of claim 21, wherein the plurality of cardiac therapies comprises a defibrillation therapy.

26. The system of claim 21, wherein the plurality of cardiac therapies comprises a rate smoothing pacing therapy.

27. The system of claim 21, wherein the plurality of cardiac therapies comprises a sub-threshold stimulation therapy.

28. The system of claim 21, wherein the one or more electrodes are configured for cardiac pacing and sensing.

29. The system of claim 21, wherein the one or more electrodes comprises at least one electrode disposed in or on the housing.

30. The system of claim 21, wherein the asystole prevention therapy delivered by the energy delivery circuitry comprises delivery of pacing pulses at a rate insufficient to restore full patient consciousness.

31. The system of claim 21, wherein the asystole prevention therapy delivered by the energy delivery circuitry comprises delivery of pacing pulses at a rate lower than a pacing rate associated with the bradycardia therapy.

32. The system of claim 31, wherein the rate lower than the pacing rate is a fixed rate or a variable rate.

33. The system of claim 21, wherein the one or more electrodes are disposed in or on the housing to define a unitary structure.

34. The system of claim 33, wherein the housing is configured to have an arcuate shape.

35. The system of claim 21, wherein the one or more electrodes comprise at least one subcutaneous, non-intrathoracic electrode array.

36. The system of claim 35, wherein the at least one subcutaneous, non-intrathoracic electrode array is coupled to the housing via a lead.

37. A method, comprising:

sensing cardiac activity from a subcutaneous, non-intrathoracic location;

detecting a cardiac condition necessitating treatment in response to the sensed cardiac activity; and

delivering one of a plurality of cardiac therapies to treat the detected cardiac condition, the plurality of cardiac therapies comprising at least a tachycardia therapy, a bradycardia therapy, and an asystole prevention therapy.

38. The method of claim 37, wherein the plurality of cardiac therapies comprises a bradycardia pacing therapy.

39. The method of claim 37, wherein the plurality of cardiac therapies comprises a cardiac resynchronization pacing therapy.

40. The method of claim 37, wherein the plurality of cardiac therapies comprises an antitachycardia pacing therapy.

41. The method of claim 37, wherein the plurality of cardiac therapies comprises a defibrillation therapy.

42. The method of claim 37, wherein the plurality of cardiac therapies comprises a rate smoothing pacing therapy.

43. The method of claim 37, wherein the plurality of cardiac therapies comprises a sub-threshold stimulation therapy.

44. The method of claim 37, wherein detecting comprises detecting the cardiac condition at a subcutaneous, non-intrathoracic location.

45. The method of claim 37, wherein detecting comprises detecting the cardiac condition at a patient-external location.

46. The method of claim 37, wherein energy for the plurality of cardiac therapies is provided from a patient-external source.

47. The method of claim 37, wherein energy for the plurality of cardiac therapies is provided from a subcutaneous, non-intrathoracic source.

48. The method of claim 37, wherein delivering the plurality of cardiac therapies comprises delivering monophasic waveforms.

49. The method of claim 37, wherein delivering the plurality of cardiac therapies comprises delivering multiphasic waveforms.

50. A system, comprising:

means for sensing cardiac activity from a subcutaneous, non-intrathoracic location;

means for detecting a cardiac condition necessitating treatment in response to the sensed cardiac activity; and

means for delivering one of a plurality of cardiac therapies to treat the detected cardiac condition, the plurality of cardiac therapies comprising at least a tachycardia therapy, a bradycardia therapy, and an asystole prevention therapy.

51. The system of claim 50, wherein the plurality of cardiac therapies comprises a bradycardia pacing therapy.

52. The system of claim 50, wherein the plurality of cardiac therapies comprises a cardiac resynchronization pacing therapy.

53. The system of claim 50, wherein the plurality of cardiac therapies comprises an antitachycardia pacing therapy.

54. The system of claim 50, wherein the plurality of cardiac therapies comprises a defibrillation therapy.

55. The system of claim 50, wherein the plurality of cardiac therapies comprises a rate smoothing pacing therapy.

56. The system of claim 50, wherein the plurality of cardiac therapies comprises a sub-threshold stimulation therapy.

57. The system of claim 50, wherein the detecting means comprises means for detecting the cardiac condition at a subcutaneous, non-intrathoracic location.

58. The system of claim 50, wherein the detecting means comprises means for detecting the cardiac condition at a patient-external location.

59. The system of claim 50, further comprising means for supplying energy for the plurality of cardiac therapies from a patient-external source.

60. The system of claim 50, further comprising means for supplying energy for the plurality of cardiac therapies from a subcutaneous, non-intrathoracic source.

61. The system of claim 50, wherein the delivering means comprises means for delivering monophasic waveforms.

62. The system of claim 50, wherein the delivering means comprises means for delivering multiphasic waveforms.